DOCUMENT RESUME

ED 139 853 UD 016 956

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TITLE The Effect of Culturally Indigenous Word Lists on Recall and Clustering by Lower-class Blacks and Middle-class Whites: An Exploratory Study.
PUB DATE Apr 77
NOTE 9p.; Paper presented at the Annual Meeting of the American Educational Research Association (New York, N.Y., April, 1977)

EDRS PRICE MF-$0.83 HC-$1.67 Plus Postage.
DESCRIPTORS Abstract Reasoning; *Black Students; *Caucasian Students; Cognitive Development; Comparative Analysis; Cultural Factors; Elementary Education; *Language Development; Learning Processes; *Mediation Theory; Memorizing; *Memory; Race Influences; Racial Differences; Racial Factors; *Recall (Psychological); Thought Processes; Verbal Learning

ABSTRACT

Recall lists were presented to 40 black lower class and 40 white middle class children in this experiment. The purpose of the study was to examine a possible explanation of the relatively poor performance of black and lower class children on tasks requiring abstract learning abilities. It was reasoned that the threshold for the production of abstract mediators necessary for tasks such as concept learning was, in part, a function of the child's familiarity with the verbal stimuli. The lower class black children were fourth, fifth, and sixth graders recruited from an inner city elementary school which was 97% black. The middle class children were fifth and sixth graders from an all white suburban elementary school. The task required learning a serial order or free recall 12 word list to a criterion of two correct, but not necessarily, consecutive trials. Words in one list were category instances rated most familiar by whites. A second list was comprised of instances of the same categories rated most familiar by blacks. Recall and clustering in free recall were hypothesized to be a function of familiarity rather than group membership. The interaction between list familiarity and social class ethnic group membership that was necessary to support the familiarity hypothesis was not obtained on measures of free recall and clustering. Although both groups clustered in free recall better with the white familiar list, a significant three way interaction indicated that clustering on familiar lists increased across trials. An opposite trend occurred on unfamiliar lists. (Author/AM)

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ED139853

The Effect of Culturally Indigenous Word Lists on Recall and Clustering by Lower-class Blacks and Middle-class Whites: An Exploratory Study

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Jensen (1969) has argued that black and lower-class youngsters are distinguished by relative deficiencies in conceptual learning abilities, or Level II abilities, which appear to rely heavily on the spontaneous use of verbal mediation. In contrast, these groups are not presumed to differ from white and middle-class children in associative, or Level I abilities, which appear to rely heavily if not exclusively on rote memory. Free recall and clustering of lists of words with embedded categories, according to Jensen (1969), reflect Level II abilities. He and his associates (see Jensen and Frederickson, 1973) have used these lists to demonstrate that middle-class white superiority in recall and category clustering emerges by grade three and is relatively pronounced at grades four through six.

On another occasion, Jensen (1966) argued that a threshold of arousal for mediational activity must be overcome before verbal mediation processes are used. If this is the case, the poorer recall and clustering by lower-class blacks may be due to their threshold level for such tasks which is higher than the threshold of middle-class whites rather than to a lack of competence in Level II abilities. The demonstration of population differences in Level II competencies, not performance, requires that the threshold levels of each group be reduced to their lowest point. This, in turn, may require different and optimal experimental conditions for each group.

Whether the threshold for the production of abstract verbal mediators is high or low may depend in part upon the frequency of occurrence of particular words in the child's environment. Since urban black and suburban white children may experience words in certain categories with varying frequencies, their thresholds for mediation on any particular list may also differ. For example, cabbage and greens are more familiar instances of the vegetable category for lower-class blacks than carrots and lettuce and, therefore, may result in a lower mediational threshold. The opposite is true for middle-class whites, resulting in a higher threshold for cabbage and greens and a lower threshold for carrots and lettuce.

It follows from this rationale that an appropriate test of Level II abilities may be word lists which are "culturally loaded." Such lists contain words which, due to the frequency of their occurrence, are more likely to be above the mediational threshold and to be categorized. A major purpose of the present research was to explore the proposition that black children recall and cluster more on black-familiar lists than on white-familiar lists and white children have the opposite tendency. The present research was also designed to investigate Level I abilities in the two populations. Accordingly, a serial order version of both the black-familiar and the white-familiar lists was used which was assumed to reflect associative abilities (Jensen, 1969).

Paper presented to annual meeting of the American Educational Research Association, New York, 1977.

UD016956

Method

Design

Serial order or free recall lists were presented to 40 black and 40 white elementary school children. One serial order and one free recall list were comprised of category instances which were rated most familiar by black lower-class children who were similar to those in the experiment. Two corresponding lists were comprised of instances of the same categories which were rated most familiar by white middle-class children like those in the experiment. The number of trials to criterion was obtained for all subjects and clustering ratios were computed for those receiving the free recall lists. Thus a 2 x 2 x 2 analysis of variance was implied with two levels of subject race and social class (black lower-class and white middle-class), two levels of list familiarity (black and white), and two methods of list presentation (serial order and free recall).

Subjects

The lower-class (LC) black subjects were fourth, fifth, and sixth-graders recruited from an inner-city elementary school which was 97% black. Their mean grade level score on the California Reading Test was $\bar{X}$ = 3.80; their average age was $\bar{X}$ = 129.83 months. The middle class (MC) white subjects were fifth-and sixth-graders from an all-white suburban elementary school. Their average age was $\bar{X}$ = 126.70 months. While the difference in age favored the LC black group and the difference approached significance, (t = 1,84, df = 79, p > .05), the three month mean difference was assumed to have little effect on the results. No comparable reading scores were available for the MC white subjects. In both groups, subjects were randomly selected and assigned to conditions.

Since the separate effects of race and social class on Level II activities were not of interest in this exploratory effort, these variables were intentionally confounded. This procedure produced two groups, white and middle-class and black and lower-class, in which differences in word familiarity would most likely occur and, which would, therefore, represent the best test of the familiarity hypothesis.

Stimulus Materials

The task required learning a serial order or free recall 12 word list to a criterion of two correct (not necessarily consecutive) trials. Both the serial order and free recall lists were comprised of the same words for either the LC black-familiar or MC white-familiar versions. All lists contained four instances of three categories (vegetables, compliments, and dances). The LC black-familiar and MC white-familiar lists are presented in Table I. These lists were constructed from norms collected immediately prior to the experiment. The MC white norms were collected from fourth and fifth graders (N = 122) at a similar elementary school in the same district as the one used in the experiment. The LC black norms were collected from different students (N = 78) in the same grade levels of the school used in the experiment. Lists of instances of each category (16 for vegetables, 14 for compliments, and 18 for dances) were given to the norm subjects with instructions to check the four which were most familiar. Word familiarity ratings were computed by dividing the sum of the ratings for all words in a category into the ratings for a particular word. Unanimous selection of the four most familiar words would yield a familiarity rating of 25. Words were chosen for the learning

task if they were rated high by one norm-group and low by the other. The word familiarity rating across the three categories for the MC white-familiar words was $\bar{X}$ = 13.08 for MC whites and $\bar{X}$ = 4.25 for LC blacks. A similar comparison for LC black-familiar words yielded $\bar{X}$ = 2.25 for MC whites and $\bar{X}$ = 11.11 for LC blacks. Two words with stronger white ratings than black ratings, "peas" and "cool," were included on the LC black-familiar lists because they received ratings which were substantially higher than the black ratings of the remaining words.

Words in the serial order list were arranged in alphabetical order to minimize category clustering and thus emphasize rote memory processes. Less intrusions which suggested the occurrence of category clustering were obtained in pilot work with these procedures than when the words were randomly arranged. Different randomizations of the words were used for each free recall trial. For both lists, the words were presented via a Gebrands memory drum set at three second intervals.

Procedures

Two Black experimenters administered the task to black subjects and a black and a white experimenter administered the task to white subjects. The experimenter introduced himself to the subject and briefly engaged him in conversation designed to put him at ease. The general nature of the task was described. The subject was told to learn the list as quickly as he could and that he could have as many chances to look at the list as he needed until he was able to recite the list correctly twice. Half the subjects received an alphabetically arranged serial order list. The remainder received the free-recall list. In the latter procedure, the list was presented to the subject who then recalled as many words as he could by reciting them aloud. No time limit for recall was imposed. The experimenter recorded the subject's responses on an answer sheet including errors and repetitions and provided no feedback regarding the number of correct responses unless the subject requested it.

The dependent measures consisted of trials to criterion for both free recall and serial order lists and clustering ratios for the free recall list. Clustering was computed according to the following equation:

$$C = \frac{R}{T - K}$$

where R is the total repetitions, T is the total words recalled, and K is the number of categories recalled (Frase, 1969).

Results

The three-way analysis of variance which was conducted on the number of trials to criterion yielded marginal effects for race of subject ($F = 3.65$, $df = 1/72$, $p < .10$), method of presentation ($F = 3.07$, $df = 1/72$, $p < .10$), and a race x presentation interaction ($F = 3.50$, $df = 1/72$, $p < .10$). Comparisons between the means suggest that the modest main effect due to race of subject can be attributed to the relatively poor performance by blacks on the serial order task. The means for blacks and whites on the free recall task were strikingly similar ($\bar{X}$ = 9.70 for whites and $\bar{X}$ = 9.75 for blacks).

A separate 2 x 2 analysis of variance (subject race by list familiarity) of clustering in free recall yielded no effects due to race of subject ($F < 1.00$). The mean clustering ratios for blacks and whites were $\bar{X} = 46.50$ and $\bar{X} = 47.00$ respectively, underlining the similarity between the groups reported above for the measure of trials to criterion on the free recall task. The analysis yielded a main effect due to list familiarity ($F = 11.77$, $df = 1/40$, $p < .01$) in which both groups clustered less on the black-familiar list ($\bar{X} = 38.00$) than on the white-familiar list ($\bar{X} = 55.50$). The predicted Subject Race X List Familiarity Interaction was not obtained (F 1,00).

Clustering on the first correct trial was compared to clustering on the second correct trial in order to examine trends in clustering familiar and unfamiliar lists. A three way analysis of variance (subject race x list familiarity x trials) with repeated measures on the last factor yielded $F = 5.21$, $df = 1/36$, $p < .05$ for the effect of list familiarity, a finding which is consistent with the main effect of list familiarity on clustering reported above. None of the other main effects nor the two way interactions were significant. However, a significant three-way interaction was obtained ($F = 7.15$, $df = 1/40$, $p < .025$). (See Figure 1.) Several trends are apparent: (1) Most relevant to the present hypothesis, clustering on familiar lists increases across trials while clustering on unfamiliar lists decreases, (2) White clustering scores are higher than scores for blacks on the familiar lists while black scores are higher than white scores on the unfamiliar lists, and (3) The difference between white performance on the familiar and unfamiliar lists increases across trials while the difference in black performance on familiar and unfamiliar lists decreases across trials.

Discussion

The purpose of this study was to examine a possible explanation of the relatively poor performance of black and lower-class children on tasks requiring abstract learning abilities. It was reasoned that the threshold for the production of abstract mediators necessary for tasks such as concept learning was, in part, a function of the subject's familiarity with the verbal stimuli. Since familiar words may vary according to cultural milieu, it was expected that black lower-class youngsters recall and cluster better with black-familiar lists than white-familiar lists while the opposite is true of middle-class whites. This hypothesis based on the effects of familiarity, contrasts with Jensen's (1969, 1970) view that performance differences between such groups on tasks requiring abstract learning abilities reflect differences in the extent to which these abilities are distributed among various populations.

The interaction between list familiarity and social class - ethnic group membership that was necessary to support the familiarity hypothesis was not obtained on measures of free recall and clustering. Nevertheless, there is evidence from the present study and from others that the hypothesis is viable. Support for the general effect of familiarity was implied by the improvement in clustering scores for each group on the familiar free recall lists from the first correct trial to the second and the decline on the unfamiliar lists. Moreover, middle-class whites did cluster more on the MC white-familiar list than on the LC black-familiar list when the trials were combined. It was the low clustering scores of LC blacks on the LC black-familiar list and their high clustering scores on the MC white familiar list that appear to be the most direct contradiction of the hypothesis. The low black clustering scores on the LC black-familiar list may be due to the ambiguity of the

category membership of some of the words. Words like together, bad, penguin, breakdown, and shaft may be rated as familiar compliments or dances when placed in the context of other compliments or dances as they were in the collection of norms; when they are out of that context as they were in the experimental materials, they may appear more like a list of random words. As a result, the tendency to cluster them may be less pronounced on earlier experiences with the list.

This interpretation receives some support from the finding of a significant triple interaction in the analysis of subject race, list familiarity, and trials. In particular, the tendency for LC black clustering scores on the LC black-familiar list to increase across trials from a point where little, if any, clustering occurred suggests the gradual adoption of a clustering strategy for words which at first encounter did not appear to "go together." In contrast, whites were unable to adopt a clustering strategy on the LC black-familiar list which they continued to treat as if it contained no embedded categories. According to this analysis, the poor clustering scores of lower-class black and middle-class white children when collapsed across all trials may be due to different reasons. For blacks it is the ambiguity of category membership which tends to be overcome with additional exposures; for whites it is the lack of familiarity with the categorization of the words which is not overcome.

The large clustering scores of blacks on the white-familiar list is also contrary to the prediction of the present study, a finding that may require modification of the earlier version of the familiarity hypothesis. According to the bicultural model of socialization, blacks become familiar with both black and white culture (Valentine, 1971). They would, therefore, do well on both black- and white-familiar lists. Because whites are familiar with only their own milieu, they would be unable to cluster and recall on the black-familiar list. If we assume that the poor black clustering on the black-familiar list is due to ambiguity as discussed above, the clustering scores across all trials are consistent with this explanation.

The only other study known to us that examined list familiarity as it relates to social class or ethnic differences in the performance of Level II tasks was reported after our own work had been completed. Ellingson (1976) found no significant differences between the ethnic group in clustering and recall of "mainstream content," although the trend consistently favored the whites. Performance on the "subcultural" list clearly supported the familiarity hypothesis. "The comparisons between the ethnic groups on the subculture free recall list showed blacks consistently superior in amount of recall and clustering. The mean clustering score for blacks was the highest found for either group on both sets of materials." (P.38). In many respects, the findings by Ellingson are also consistent with the bi-cultural model.

How can the bi-cultural model hold blacks equal to whites on Level II tasks with mainstream content when other studies have shown them to be inferior? Although the answer is not suggested by the results of the present study, an important feature of the present findings is that they clearly contradict the hypothesis that there are differences in Level II learning abilities between different racial and social class groups. On neither of the measures, trials to criterion in free recall and clustering in free recall, does the lower-class black group differ from the middle-class white group. Thus, the importance of the present findings with 10 year olds is that they extend those of Ellingson (1976) and Scholnick et al. (1968) well into the stage of development where the purported difference in Level II abilities is hypothesized to exist. The present findings also partially replicate and extend those of Messing

and Traxler (1973) and Phye and Zimmerman (1976) by obtaining no differences on clustering and recall in more "extreme" groups, the same social class-racial groups used by Jensen. In all, these studies are a basis for contradicting Jensen's hypothesis of population differences in conceptual abilities on empirical grounds.

The ability of the familiarity hypothesis to explain social class and racial differences in intellectual performance is yet to be established. Nevertheless, some variable or set of variables is contributing to the inconsistency of findings which range from white superiority to no differences to black superiority on one or another measure of Level II abilities. The existence of a range of findings is evidence that there are occasions on which the Level II performance of blacks is equivalent or superior to that of whites, suggesting that population differences are in performance not in competence. The present exploration together with the findings by Ellingson (1976) provide a basis for speculating that the familiarity may be one variable that raises the level of performance closer to the level of competence.

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Table 1

Familiarity Ratings of LC Black-Familiar and MC White-Familiar Words by LC Black and MC White Children

Type of List	MC White Subjects (N = 122)	LC Black Subjects (N = 78)
Vegetables		
LC Black-familiar		
Greens	1.43	13.80
Cabbage	.61	7.07
Yams	.81	6.39
Peas	9.22	6.70
$\bar{X}$	3.02	8.49
MC White-familiar		
Beans	6.35	2.35
Carrots	13.52	5.72
Lettuce	9.63	4.04
Peas	9.22	6.70
$\bar{X}$	9.68	4.70
Compliments		
LC Black-familiar		
Hip	1.01	8.36
Together	1.02	13.04
Bad	1,01	8.03
Cool	13.79	11.71
$\bar{X}$	4.21	10.28
MC White-familiar		
Great	14.60	5.68
Good	13.99	4.68
Nice	12.17	5.68
Cool	13.79	11.71
$\bar{X}$	13.64	6.94
Dances		
LC Black-familiar		
Breakdown	.44	14.52
Four-corners	.88	9.68
Penguin	.66	17.74
Shaft	.00	16.45
$\bar{X}$	.50	14.60
MC White-familiar		
Twist	15.08	3.22
Waltz	21.28	.97
Cha-cha	11.31	2.90
Ballet	15.96	.64
$\bar{X}$	15.91	1.93

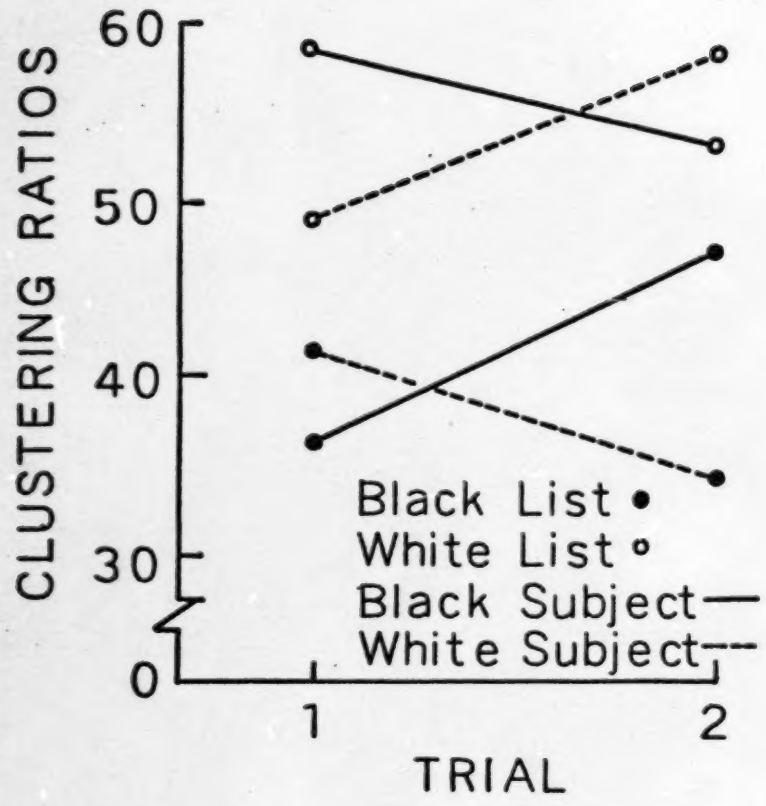

FIGURE I

Mean Clustering Ratios by LC Black and MC White Subjects

on LC Black- and MC White-Familiar Lists